THE VETERINARY RECORD

A Weekly Journal for the Profession.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S.

No. 1538 DECEMBER 29, 1917. VOL. XXX.

THE CENTRAL V.S. AND INJURIOUS HORSE-FODDER.

We understand that the Central V.S. will hold a special meeting, to which all members of the profession are invited, at 7 p.m. on Thursday next, at 10 Red Lion Square. The object is to discuss the ill-effects upon London horses of the present food supply, and to consider what steps can be taken to bring about an improvement. The meeting may do good—perhaps great good—and it is hoped that a good number of practitioners outside the Society will attend it.

London veterinary surgeons well know the terrible damage the present supply of food-stuffs is doing among the working horses of the Metropolis. They are asked to join in an endeavour to effect an improvement; and there seems to be a genuine chance that this meeting may help in effecting one. There is every reason to believe that the troubles are solely due to unsatisfactory supervision of the present transport to London; and if that fact, and the amount of resultant damage, could be brought home to the authorities, a great improvement might speedily result. Horse-owners are already making representations to the authorities; and, as regards one aspect of the question, veterinary support may be of great service to them. For that reason it is desirable that the meeting should be as representative as possible.

THE ROARING OPERATION.

Not much has been heard of this operation since the war began; but the abstract of Coquot's article which we published last week indicates that it is being extensively practised in the French army. Perhaps, later, we shall hear of our Army experience, which may enable us to judge the operation better than we could in 1914. At that time, much of the best veterinary opinion in England was still reserving judgment upon its value. Undoubtedly it was often followed by improvement, which in some cases was considerable; but it seemed possible that some of the improvement might have taken place without it. It was also possible that owners and operators were inclined to magnify the improvments that occurred; it was certain that the operation was not free from disadvantageous sequelae.

Two years' trial of the operation in the British Army before the war yielded results which, while far from so successful as some of those claimed in private practice, were also not nearly sufficiently numerous to warrant a decided opinion. The Army experience since then, when it is published, may go a long way towards settling the merits of the operation.

AZOTURIA OR FORAGE POISONING?

I was particularly interested in Mr. Pratt's note in your issue of December 1st, and Mr. Brown's in that of 22nd. I will record a few cases, in reverse sequence, beginning with the more striking ones.

Case I. On the evening of Nov. 23rd, I received a wire from a country vicar asking me to see his filly. She had been out day and night with another filly, eight months old, and was found in the afternoon lying down and showing signs of pain,

On arrival, about 9 p.m., I found a two-year-old hackney filly lying stretched in a stall. Respirations 50, pulse approaching 90 and weak, temperature 104°. The mucous membranes were very injected. There was profuse perspiration and great distress, she made occasional struggles, but was now unable to rise, though she had been on her feet at short intervals up to within an hour of my arrival. There had been no passage of fæces nor urine since she was found ailing. Rectal examination revealed hard balls of mucus-covered fæces. I passed the catheter and found the urine coffee-coloured and flaky.

Prognosis. Very unfavourable.

Treatment. Cathartics, enemas, sedatives.

I was passing that way early next morning and called in. The Vicar informed me that the patient had died in the small hours, but that he was glad to see me as the younger filly was now ill,

Case II. This was a weakly pony foal and had done badly on pasture. She now looked dejected, and laid "full length" most of the time. When urged to rise she would nibble at a little hay, and very shortly lie down again. Breathing was rather hurried, but there were no signs of great distress. Pulse weak, temperature 103°. No evidence of defaecation during the night. Evacuation of the rectum and bladder showed exactly the same conditions as in the case of the other filly.

Prognosis. Doubtful.

Treatment. Cathartic, enema, and oxalic acid every hour. I failed to see the case the following day (Sunday).

On the Monday morning, Nov. 26th, she had greatly improved. Free evacuations, clear urine, appetite fair. Respirations normal, temp. 101·1°, pulse 60, Appearance generally bright for one in such low condition.

I then prescribed a long course of Quinine sulph. and Liq. ferri perchlor. I have seen her at intervals since up to ten days ago, and she continued to improve in condition.

Owing to lack of assistance I was, unfortunately, not able to make a post-mortem examination of the filly which died,

Case III. On Oct. 31st, a half-bred two-year-old filly was found on the field apparently in pain and barely able to rise. I was sent for but was unable to attend at the time. I instructed them to take her home (about half a mile distant) and make her comfortable. I attended in the evening. They had experienced great difficulty in getting her to walk home. She was now lying flat in the box.

Symptoms. Identical with No. I, except that she just managed to get on her feet occasionally for a few minutes, and went down again.

Treatment. Cathartic, sedative (chloral), enema, catheterisation.

Next morning there was little or no change, but less distress—due, probably, to the action of sedatives. Treatment was now changed to oxalic acid every hour for eight hours, then every two hours. She rallied considerably towards midnight, got up and commenced to eat hay. She dropped dead at 3 a.m.

Autopsy. Disappointing. There was no striking lesion. Pale coloured clot in the heart, congestion of the kidneys, and dark coloured urine in the bladder.

Case IV. A roan hackney mare, 4 years old, found down on the field on the morning of Nov. 16, 1910. She grazed in a field close to the yard, and the owner endeavoured to get her into the stable. She dropped down on the yard, and was hauled into a box on an improvised sleigh. She showed the same symptoms as Nos. I. and III.

Treatment. Cathartics, sedatives and diuretics. She died that night. No autopsy was made.

Remarks. These cases are particularly interesting to me, and I am grateful to Messrs. Pratt and Brown for recording their cases. Had they not done so, I confess that, owing to pressure of work and little assistance, I would probably have been tempted to let these go unrecorded—for the present at least.

Four conditions were common to all my cases :—

(1) They were all females.

(2) They were out day and night in winter.

(3) None were plethoric animals, and they grazed on rather poor land.

(4) The pasture had a number of oak trees in or around it.

In the case of Nos. I. and II. the pasture is notorious in that every fresh bovine animal which is turned on to it suffers from "red-water."

What can be the cause and nature of this condition? In view of our present meagre knowledge of the pathology of azoturia, would it not be reasonable to suggest that these animals suffered from a form of this disease?

Would ingestion of acorns cause the blood to become surcharged with proteids and bring about the lesions—tannin causing the constipation?

Carnarvon. L. W. Wynn Lloyd.

The Avenue of Invasion and the Behaviour of the Infection of Contagious Abortion in the Uterus.

At the fifty-fourth annual meeting of the American V.M.A., held in Kansas City in August last, Prof. W. L. Williams presented a paper upon this important subject. This was followed by a discussion, and supplemented the next day by a clinical demonstration upon five sterile cows. The following is a condensed summary of the author's views, which are of considerable interest.

Williams points out that "any intelligent effort at the control or cure of contagious abortion must be based upon some knowledge or belief regarding the portal by which the infection enters the uterus and the manner in which it acts therein," and then proceeds to discuss various views upon this question. He regards the portal of entry of the bacillus into the organism as yet unsettled, and the exact subsequent course of the infection as still more uncertain. He points out that, granting that the bacillus enters the body by the mouth, it is not known at what point in the digestive mucous membrane it penetrates into the blood stream to cause intra-uterine infection, or indeed that it so penetrates the mucous membrane at all. It may, on the contrary, multiply and persist in the alimentary tract, escape in the faeces, enter the genital tract through the vulva, and thus gain the uterine cavity without having entered into the blood stream at all. A further possibility is that, after escaping with the faeces, it might enter the udder through the teat canal, and thence enter the blood stream and gain the uterus.

Further, if it be granted that the bacillus reaches the uterus through the blood stream, it is still not clear how it escapes from the blood stream into the uterine cavity and into the foetus and its annexes. The results of M'Fadyean, Stockman and other workers emphatically negative the view that it penetrates the placental filter. M'Fadyean and Stockman found the bacillus first in the utero-chorionic cavity, second in the fœtal fluids and fœtal digestive tube, and last in the fœtal blood. They frequently found it in the utero-chorionic space and not in the fœtal blood, while it was never found in the fœtal blood without also being present in the fœtal fluids and in the utero-chorionic space. Penetration of the placental filter by the bacillus would inevitably reverse this order of appearance.

There are two methods by which the bacillus may plausibly be supposed to invade the utero-chorionic cavity—through the uterine mucosa from the blood stream, and through the cervical canal from the vagina. From the density and apparent non-secretory and non-excretory character of the bovine uterine inter-cotyledonary mucosa (which seems to be an unusually dormant protective membrane), Williams considers it very improbable that Bang's bacilli or any comparable organisms ever escape through it from the blood stream into the uterine cavity. The placentar areas or cotyledons, when not in physiologic contact with the fœtal placentæ, are much more suitable avenues for the passage of infection; but the period during which they are

open for the purpose appears to be limited. Here Williams indicates and emphasises the importance of some points regarding which most writers on contagious abortion say nothing.

In the non-gravid uterus, the placentar areas apparently only permit the passage of bacteria during menstruation—that is, for a period of only from twelve to twenty-four hours in each oestral cycle of about twenty-one days. During this period it is possible that bacteria circulating in the blood stream may escape into the uterine cavity with the menstrual blood, become domiciled in the uterine cavity, and prevent conception or destroy the fertilised ovum. The more frequently menstruation takes place, the greater is the probability of infection in this manner; and this seems to explain the clinical observation that, the younger the heifer is when mated, the more likely she is to conceive. In addition, the menstrual blood poured into the uterine cavity affords an increased nutrient supply for any bacteria already present there; and thus each menstruation arouses and stimulates any existing infection anew.

There is also a second epoch during which invasion of the uterine cavity from the blood-stream is feasible. During the second half of pregnancy, some of the fœtal and maternal placentæ about the internal os uteri commonly become detached; and a variable amount of hæmorrhage—perhaps represented by a blood-clot scarcely larger than a pea, but often amounting to several ounces of blood coagula—takes place into the uterine cavity. The process is unaccompanied by macroscopic evidences of inflammation, and is so common that its presence may be regarded as the rule in cows. Almost always, according to Williams, if the uterus is sealed, some hæmorrhage is recognisable just at the os uteri internum after about the fifth month of pregnancy. Common and well-nigh universal though this hæmorrhage is, Williams regards it as a pathological process, and adds that it deserves study. Like menstrual hæmorrhage, it may permit the escape of bacteria from the blood stream into the uterus, or provide fresh nutrient material for bacteria already existing there.

The other possible avenue of entrance for the abortion bacillus is the cervical canal. Apparently infection may readily invade the vagina and cervix through the open vulva, and, if the cervical canal is open, may gain the uterus. It should also be remembered that the vagina and cervix may be invaded *from the blood stream*, and invasion of the uterine cavity through the cervical canal follow. In this connection Williams points out that the vaginal and cervical mucosæ are more active generally than the inter-cotyledonary uterine mucosa, and that, therefore, invasion of the vagina and cervix from the blood stream is quite as possible as invasion of the uterus from that source.

Two definite conditions must be considered in studying invasion of the uterus through the cervical canal—the open, and the sealed canal. The cervical canal is termed open—even though its opposing mucous surfaces may be in immediate contact—so long as it is not hermetically sealed. In bovine physiological pregnancy the canal becomes hermetically sealed within a few days after fertilisation, by a tough, firm substance apparently emanating from the cervical mucous membrane. This uterine seal appears to be a highly efficient bacterial barrier. Once it has formed there is no evidence that bacteria can pass through it, and no strong evidence that bacteria ordinarily found in the genital tract can dissolve it or break it down. On the other hand, clinical and post-mortem oscervations alike yield indisputable evidence of the inhibition of the formation of the uterine seal owing to the presence of infection in the cervical canal. Intense chronic purulent cervitis is very often found in sterile cows, and assumes various forms. Sometimes there is visible intense inflammation of the cervical mucosa about the os uteri externum; sometimes there is sclerosis of the mucous bases of annular cervical folds which displace the cervical canal and render catheterisation of the uterus difficult or temporarily impossible; and sometimes old, caseated pus is encountered in the canal, or when the uterine catheter is introduced to the os uteri internum and a stream started through it, the first substance to return is a small quantity of muco-pus. Such cows are usually obstinately sterile; but occasionally one may become pregnant, for the abundant mucus of œstrum may mechanically enable spermatozoa to elude the infection, reach the pavilion of the oviduct, and fertilise the ovum.

In a previous publication, Williams has shown that the fœtus constantly swallows its amniotic fluid from a very early period. It certainly does so as soon as hairs appear upon the skin; for fœtal hairs can readily be recognised in the meconium at that time. This fact, when viewed in conjunction with bacteriological researches, becomes of great importance. Hagan has shown that a bacillus belonging to the colon group is present in many non-pregnant bovine uteri, and that it is essentially as common in the utero-chorionic cavity of the pregnant uterus. He has also shown by abattoir studies that pathogenic organisms invade the amniotic fluid from the utero-chorionic space (not through the placental filter) and, being swallowed by the fœtus, are stored up as an integral part of the meconium, where after birth (and sometimes before) they play a vital rôle in calf scours. Associated with the colon organism Hagan also finds an organism not yet identified, which reveals some of the characteristics of the Bang bacillus. Such infection prevails widely both in pregnant and non-pregnant cows, and does so whether the cervical canal is sealed or open.

In 1914 Williams pointed out that whenever the exudate of contagious abortion existed in the uterus it was most voluminous about the os uteri internum, and then radiated forward toward toward the apices of the uterine horns. Since that time, in several instances, he has observed the exudate in the apices of the horns, notably of the non-pregnant horn. Thus three possible foci of infection may be recognised—the os uteri internum, and the apices of the two horns. Of these, the first is by far the most important.

In all cases where Williams has been able to study the behaviour of the infection in the uterus immediately after abortion or premature birth, or

in cases where abortion appeared imminent and the uterine seal was absent, or its integrity destroyed, there was a well-marked and characteristic metritis—the metritis of contagious abortion. The metritis is always most intense at the os uteri internum, from which point it radiates towards the apices of the horns with constantly decreasing intensity. When the uterine seal is intact, on the other hand, there is no visible metritis. The exudate of contagious abortion may be present in cubic centimetres or in litres, but the metritis of contagious abortion is absent; and there is nothing to suggest that, had the cow not been slaughtered, she would have aborted.

Three distinct clinical pictures may be observed in connection with death or expulsion of the fœtus. In the first, desiccation or mummification of the fœtus occurs. The fœtus perishes within the sealed uterus, does not undergo putrefaction and is not expelled, but desiccates and remains as an inert body, inhibiting œstrum indefinitely. In this case the uterus is sealed, the exudate of contagious abortion is present, the intra-uterine infection causes a copious inter-placental hæmorrhage detaching the fœtal sac completely from the uterus, the hæmatome and fœtus desiccate, the cervical canal remains sealed, and no abortion occurs. Here the infection in the uterus, in the presence of a physiologic uterine seal, though it indirectly kills the fœtus, does not cause its expulsion.

The second clinical picture differs markedly from the first. The formation of the uterine seal is inhibited, or, if the seal is formed it is destroyed. The infection advances slowly from the os uteri internum forward, the healthy anterior portion of the uterus reacts to the irritant, and the uterine contents are expelled. The fœtus may be still alive while the cervical portion of the fœtal sac is necrotic; and the fœtus may be born alive.

The third clinical picture differs from the second by giving evidence of a greater virulence of the infection. The uterine seal is absent, and the intra-uterine infection is virulent and spreads rapidly, causing necrosis of the uterus, emphysema of the fœtus, and inability to abort. Here abortion does not take place, because the entire uterus becomes paretic or necrotic, and is unable to expel the fœtus. Ultimately the emphysematous fœtus may cause a rupture of the necrotic uterus with rapid death of the patient, or the uterus may adhere to the rumen and the fœtus slough into it.

These studies, which conflict with no facts recorded by others, record that there are three foci in the uterus from which the abortion infection spreads—the os uteri internum and the apices of the two horns. From the standpoint of their ability to produce serious disaster in the pregnant uterus, the foci in the apices of the horns play a minor rôle. From the standpoint of sterility, the infection in the apices of the horns and in the continuous oviducts is of great importance. From the standpoint of both abortion and sterility, the infection of the cervical canal and at the os uteri internum plays the major rôle, The destruction of the uterine seal, or the inhibition of its formation, is essential to the development of the more commonly observed uterine disasters. Williams believes that the most common disasters caused by contagious abortion in the uterus are due to the infection having gained a habitat within the uterus, or rather within the cervical canal, *prior to conception*. By its presence the infection either inhibits the formation of the uterine seal or disturbs its formation so as to render it an insufficient barrier against invasion. It is possible that intra-uterine infection sometimes breaks down the seal after it has formed; but proof of this is wanting at present.

The original portal of entry of the abortion infection into the system requires further study; but at present the evidence points towards two great sources. The first of these is intra-uterine infection of the fœtus, and the second feeding of the new-born calf with contaminated milk. As regards the second source, Williams points out that the largest known volume of the Bang bacillus occurs in the utero-chorionic space of the gravid uterus. Thence it escapes by the vulva before, during, or after abortion or parturition, along with other important uterine infections, and flows down over the tail and escutcheon to reach and contaminate the udder. The calf may swallow the infection from the exterior of the udder when sucking, or the milker may introduce it into the milk afterwards given to the calf. Schroeder and others have found the Bang bacillus in the milk within the udder; but Williams thinks that clinical evidence at present indicates that this has far less peril for the calf than has the infection which emanates from the genital canal and flows down outside the udder.

There is good clinical and experimental evidence that, once the fœtus or calf has become infected, the infections remains permanent, vacillating greatly in degree. It is especially significant that large groups of heifer calves, suffering severely from scours and pneumonia, abort very largely at the first pregnancy. Apparently, while the system is depressed and wavering under the virulent bacterial invasion of scours and pneumonia, the infection shows an affinity for the genital system, where it remains until breeding age, ready to cause disaster.

As regards other bacterial intra-uterine infections, Hagan has traced the course of infection well in the case of a bacillus of the colon type. He recognises the bacillus in the utero-chorionic cavity of the cow immediately after calving, and in the rumen and rectum of the new-born, apparently healthy calf. The same is true in the abattoir. He finds bacilli first in the utero-chorionic space, next in the fœtal fluids, then in the fœtal digestive tube. Clinically, the calf bearing alimentary infection at the time of birth frequently dies in a few hours from acute sepsis, and yet more commonly develops calf scours and arthritis. Later, the survivors suffer from chronic arthritis, pneumonia, or chronic scours.

Basing his opinion on the facts and conclusions above stated, Williams now advises that contagious abortion should be controlled by systematic hygiene of the genital apparatus. This should be "not for a day or year, but a constant permanent plan by which it is aimed to breed from only those animals having as clean sexual organs as it is possible to secure and maintain." The genitalia of all breed-

ing cattle should be carefully inspected, animals with evident genital disease should be excluded from breeding until recovery, and any part of the genital system in either sex (here it should be noted that Williams believes the bull to be an important disseminator of contagious abortion) which is or is believed to be dangerously infected, should be disinfected as far as possible. For some years past, to prevent ante-natal infections, Williams has advised disinfection of the genital tube prior to breeding. He also advises disinfection of the genitals after parturition, with the double object of protecting the new-born calf from infection due to contamination of the outside of the udder from genital discharges, and of promptly restoring the maternal genital system for the next breeding.

The disinfection of the genital tube is necessarily imperfect. The anatomical disposition of the uterus and cervix renders their complete disinfection impossible. The technique has been greatly improved, but is still in its primary stage. Clinically it rarely succeeds, because it is rarely applied skilfully, conscientiously, and perseveringly; but, whenever it has been so applied, it has been successful. Sterility has been checked, the abortion rate has been lowered, metritis and retained fœtal membranes have been greatly diminished, and calf scours and pneumonia satisfactorily repressed.—Abstract from the *Journal of the American Veterinary Association.*

VICIOUS CIRCLES IN PATHOLOGY.

Dear Sirs,

The enclosed letter was handed to me with the query "Do you think your Veterinary journals will publish this letter?"

My reply was, "I may safely say all the Editors of the Veterinary press welcome correspondence from medical men on matters of professional interest."—Yours truly,

Friarn House, Bridgwater. W. Scott.

To the Editor, "Veterinary Record."

Sir,

During recent years considerable attention has been paid by students of human pathology to what is known as the "vicious circle," *i.e.*, a morbid process by which the reactions provoked by a primary disorder aggravate such disorder.

In the ordinary course of disease reactions are beneficent and tend to restore the organism to health. Where, however, a "vicious circle" is present, the *vis medicatrix naturae* is perverted and may even become a *vis devastatrix.*

The injurious influence of this morbid process may operate in three directions:—

(*a*) The aggravation of disease,
(*b*) The destruction of organs,
(*c*) The termination of life,

and a large part of therapeutics consists in breaking the "circle."

The study of this morbid process contributes to the accuracy of diagnosis and treatment, and assists the practitioner in unravelling the tangled processes of disease.

If your readers have met with examples of the "vicious circle" in diseases of the lower animals, I shall be grateful to be informed of them.—Yours faithfully,

Jamieson B. Hurry, M.D.

Westfield, Reading.

SOAP AND SUGAR FOR WOUNDS.

I read a fortnight ago your translation on soap in the treatment of wounds. This is by no means new. I have washed dirty wounds with soap solution and sugar for some years with very good results, and I think if those medicos added sugar to their soap they would obtain even better data. Briefly, soap with sugar makes an ideal decalcifying solution, activates the flow of healing lymph, and does not retard phagocystosis, the two cardinal ideals in wound therapy.

W. Scott.

P.S. I also make up a simple and excellent pessary for wounds, metritis, cystitis, etc., of soap, sugar, Ac. boric. Cheap, simple and useful.

A NOTE ON JHOOLING IN CAMELS.

By H. E. Cross, M.R.C.V.S., D.V.H., A.Sc.,
Camel Specialist, Sohawa.

Jhooling, or Jhoolak as the disease is sometimes called, is a contagious disease of camels—manifesting itself in the formation of local tumours, hot and painful, of a fibrous character and terminating in suppuration and raw patches.

Distribution. The disease is widely distributed throughout the Punjab; it is not so common in the Lahore district as in the Jhelum and Rawalpindi districts. It usually occurs in the cold weather but is met with occasionally in hot weather.

Etiology. The casual organism has not yet been isolated, though it is probably a fungus.

Pathogenicity. Inoculation of emulsion of the lesion into horses, cattle, buffaloes, dogs, guinea-pigs and rabbits does not produce the disease.

If portions of the lesion are rubbed on the skin, whether the skin be scarified or not, no Jhooling lesion is produced in any of the above animals.

Horses, buffaloes, and cattle kept in contact with camels suffering from Jhooling do not contract the disease.

When portions of a Jhooling lesion are rubbed on the scarified skin of healthy camels the disease develops after a few days. In only one case did the disease develop when a portion of a Jhooling lesion was rubbed on the unscarified skin of healthy camels.

Healthy camels kept in contact with camels suffering from Jhooling contract the disease rapidly.

Symptoms. The first symptom is a hot, hard and painful swelling varying from 1 to 5 inches in diameter, usually on the neck, hindquarters or testicle, but the lesions may occur in almost any part of the body. After a few days the swelling becomes very irritating, and, if situated in any part of the body that the camel can reach with his teeth, he will gnaw at it leaving a raw patch. In all cases after the lapse of some time suppuration takes place and finally the wound heals, leaving a small white patch which lasts for several months. As a rule several lesions are found on a camel suffering from the disease and the camel loses condition. The lesions take a long time to heal and if situated in any part that comes in contact with the *palan* (saddle) the camel has to be put off work.

Anatomical changes. The tumour consists of fibrous tissue finally undergoing suppuration. Examination of the pus reveals streptococci: no staphylococci have been observed. In camels suffering from Jhooling, on which I have made post-mortems, no lesions have been observed in the internal organs.

Treatment 1. The best treatment, and one which gives very satisfactory results, is the following:—A strong red Iodide of mercury blister should be applied

and after three days washed off with soap and water. The diseased areas should then be excised, and finely powdered permanganate of potash applied. The permanganate of potash must be well rubbed in and not simple dusted on. Three dressings at intervals of four days are usually sufficient.

Treatment 2. Sometimes good results are obtained by excising the lesion and then applying pure phenyle or carbolic acid. The following day the wounds should be thoroughly washed with water and then treated with Black wash (30 grains calomel, half an ounce of glycerine, 1½ ounces of tragacanth mucilage, and lime water to make 10 ounces of lotion.)

Camelmen apply boiling ghee to the lesions and "fire" round the edges of the lesions with the idea of preventing the lesion spreading. This treatment, however, cannot be considered satisfactory.

If the lesions are on the testicle, or in situations where they can be reached by the tail, the tail must be tied.

Prevention. Camelmen are well aware of the contagious nature of this diecase. If they have a camel suffering from Jhooling lesions in the neck this camel is always placed first in the string of camels; whereas if the lesions are on the hindquarter the camel is tied last.

Should a case of Jhooling occur amongst a number of camels, it should be at once isolated from all other camels. The remaining camels should be very carefully examined and divided up into lots and not allowed to mix. Should more cases be found they should be at once isolated. The disease spreads very rapidly amongst camels and causes a great deal of trouble, so that every effort should be made to prevent the disease from spreading, by careful examination and segregation. In camels suffering from Jhooling, lesions in different stages are met with—healed up lesions, raw patches and swellings.

No camel should be bought if small hard white spots are observed on the skin (they undoubtedly represent healed up Jhooling lesions) without careful inspection for raw patches and swellings.

(Agricultural Research Institute, Pusa. Bulletin No. 72.)

Report on the Health of the City of Manchester, 1916, by James Niven, M.A., M.B., LL.D.

This issue contains no veterinary report—the veterinary staff are working as they can: it is therefore confined to report [abridged] on the milk supply, and it speaks well for the organisation that so much has been accomplished under the conditions.

Milk Supply.

There is, at the present time, a shortage of cheese, although it may be expected that precautions will be taken to prevent this from recurring next year. The great rise in the price of cheese will, of course, tend to reduce the supply of milk apart from the effect of an increased scarcity of winter feeding stuffs, and it may be necessary to take definite steps to secure an adequate supply of fresh milk and to supplement this by dried milk and by unsweetened condensed milk.

The retail price of milk in 1914 was: Summer, 3½–4d. per quart; Winter, 4d.–4½d. per quart.

Order from the Board of Agriculture November 15th, 1916, limited the price to 6d.

Middle of March, 1917, a new Order was issued making April a winter month. Until a new Order is issued the price is 5½–6d. per quart. (The retail price at the time of going to press is 7d. per quart).

The rise in prices bore very heavily on poor persons, and there can be no doubt that young children were suffering very severely When the School for Mothers came to the rescue and determined to sell milk for children attending the Centres at 4d. a quart. This was in November, 1916.

No special effort was made, nor would it have been of much avail, to procure milk of special quality for the children attending the Centres. Chemically, at all events, the milk is of good quality, and the mothers are taught at the School for Mothers how to handle it. The Health Visitors continue to instruct mothers to scald all milk to be given to young children—that is to say, to bring it to boiling point.

The tuberculosis free herd supplying the hospitals had in the end of 1916 become infected, and the milk, though very rich chemically, was not satisfactory otherwise. So far as tuberculosis is concerned, with the assistance of Major Brittlebank, A.V.C, the tuberculosis free condition of the herd was restored. Tuberculosis of the udder was found in one of the City cowsheds, which has since been disused.

By reference to the tuberculosis section it will be seen that the sampling of milk for tuberculous infection has been partially resumed. The difficulties in procuring a veterinary officer were finally in some measure met by the courtesy of the Markets Department, who permitted the services of one of their veterinary assistants to be used on one day a week for visiting cowsheds and examining cows. Mr. J. F. Dixon's obliging temper and useful work deserve recognition, especially as he has resigned his off time whenever called upon. But for various reasons the work has been much interrupted, and the necessary number of visits has not been paid to the farms found to be giving tuberculous milk. Still, a partial control has been exercised over outside farms, and out of 321 farmers' milks tested during the year no fewer than 38 were found to be infected with tuberculosis—that is to say, 11.59 per cent.

The lowest percentage of tuberculous samples reached was in 1909, when it was 5.79. In 1910 it ascended abruptly, and has continued high ever since.

In the interpretation of such a table the first doubt which presents itself is whether the table represents the milk supply or the methods of the sampler.

This ascent may have been emphasised by difficulties as regards feeding stuffs and by the selling off of young cows, but these factors are not the cause of the rise. There is no reason to suppose that the policy of keeping the herd young, so strongly advocated by our veterinary surgeon, suffered any reversal prior to the war; quite the contrary. The uncertainty produced by the Order of the Board of Agriculture may have had something to do with it, relaxing the vigilance of the farmers. There is one other factor which one turns to, viz., the possibility of an unfavourable differentiation in dairy farms contracting with Manchester milk dealers as compared with London and perhaps with other localities. This is a difficult matter to settle, and one can only refer to the annual reports on the Health of London.

As the veterinary surgeon has been unable to revisit the farms found to be giving tuberculous milk, whether a cow with tuberculous udder was or was not found on the farm, these have been referred to the Medical Officer of Health for the county in which they were situated, with all the particulars in our possession, and information has also been given to the District Medical Officer of Health. Valuable assistance has thus been obtained. On the whole it has been possible to secure supervision over the disposal of cows with tuberculous udders. The case in which we have not been able to do all that we could have wished is where an Order has been made requiring the farmer to cease supplying milk for consumption in the City, but suspended to give the farmer an opportunity to get his farmstead put in better condition. These cases we have had to leave to the County authorities, and it may be that they are under the same difficulties as we experience in Manchester.

In the same manner we have not been able to secure veterinary inspection of our own cows within the City, a duty in which difficulty was already experienced, while Major Brittlebank was in Manchester, owing to the time consumed by visits to farms outside. It will, therefore, be understood that the veterinary supervision was practically withdrawn in 1916. As regards sampling the supply from the Manchester farms, this is much more difficult than the sampling of supplies coming from without and arriving at Manchester railway stations. The control of internal farms practically rests on veterinary examination of the cows.

The question presents itself whether there is any advantage in having milk farms in the immediate neighbourhood of the City. There can be no hesitation as to the answer. It is of the greatest advantage that milk should reach the consumer as soon as possible after milking. The supply of a large town should come as far as practicable from within its boundaries or from a limited area outside. The freshness of the milk is an important element in its value to the consumer. This must be the answer until arrangements have been made for keeping the milk in summer cooled down from milking point to the point of delivery to the householder. It is a further advantage that milk should be produced within the City, since then alone it is possible to control the conditions under which it is produced.

An estimate was made in 1902 of the milk daily consumed in the City, and the figures arrived at were :— 25,500 gallons arriving by railway, 1000 brought in by cart, 3000 produced within the city—total 29,500 galls. This, of course, is exclusive of condensed and dried milk.

A fresh estimate was made by the Manchester Milk Dealers' Association in May, 1917, as follows :— 30,500 gallons arriving by rail, 500 by motor, 2200 produced within the City—total 33,200 galls.

The Manchester and Salford Milk Dealers' Association estimate that in the six months ending April 30th there was a falling off in the supply estimated at 15 per cent. on recent previous years. The cause of this decline is not altogether the increased price. There has been a greatly increased demand for milk to manufacture condensed milk, and the manufacturers have a great advantage over the milk dealers in respect of transport. Probably, also, the manufacture of whole dried milk is increasing. There is, also, a greatly increased demand for cheese.

The number of children under five years of age is about 80,000, and, allowing each a pint of milk a day, 10,000 gallons should suffice for their needs. This is to be regarded as a first claim on the milk supply.

The great needs of this part of the supply are that it should be produced under clean conditons and be quickly transported to the consumer without any intermediate manipulation. As it is impossible to secure freedom from tuberculous or other infection, all children's milk should be scalded ; but this requirement cannot be ensured, and it is therefore necessary to maintain as much control over the milk as is possible under present conditions, in which there is a shortage of labour on the farm, shortage of veterinary and sanitary staffs, and shortage also in the laboratory.

The year 1916 witnessed three movements in Manchester for the improvement of the milk supply. Late in 1915 and early in 1916 a movement was initiated by Councillor Ernest Simon for a cleaner milk supply. Mr. Simon had been to see the farm of Mr. W. J. Buckley, of Basingstoke, who is much impressed with the Score Card system adopted in America for the inspection of farms, and also with the system of grading and certifying milks, whereby a pure supply is obtained for children. There appears to be no doubt that the highest grade of milk in America is better than any milk supplied here.

On January 26th, 1916, a Sub-Committee of the Sanitary Committee was appointed to consider the proposals put forward by the National Clean Milk Society, and Mr. Simon was appointed Chairman. Interviews were held with the Manchester and Salford Milk Dealers' Association on the subject, and also with Prof. Delépine and Mr. James Sadler, Secretary to the Cheshire Milk Producers' Association. Mr. Buckley was invited to expound his views in Manchester, and gave a very interesting address.

The two points which he chiefly urged were :—

1. Inspection of farms on the Score Card system, which, by way oompetition, he believes to have a lovelling up effect on the farmer.

2. The grading of milk supplies, so that young children may have the benefit of a certified milk supply. Under the Milk and Dairies' Act provision is made whereby the Local Government may authorise the use in connection with the sale of milk of the designation "Certified milk," and prescribe the conditions thereto applying. It is to be hoped that this regulation may come into effect.

The Manchester and Salford Milk Dealers' Association were favourable to the Score Card system of inspection, but doubtful of the possibility of grading milk.

Professor Delépine was consulted chiefly on the proper basis for a proposed form of contract with farmers supplying milk to the Corporation and to milk dealers. He stated that experiments carried out by him had shown that milk of a high standard of bacteriological purity could, with certain precautions, be obtained which would keep for a sufficient length of time. It was thereupon resolved that he should be asked to make further investigations into the quality of the milk sold in Manchester and report on the whole subject, also upon certain investigations carried out on the production of an improved quality of milk.

The third impulse came from the Royal Agricultural Society's Show, which was held in Manchester last year. The prizes given by the Society entailed a good deal of work, and yielded interesting results as regards the quality of milk produced by the competitors, which was notably in advance of the average quality of Manchester milk. But they gave little indication of the conditions under which the normal supply rests.

The method adopted has been to take the specific gravity with a hydrometer, estimate the fat by means of a centrifugal machine, and from these figures calculate the solids, not fat, by the formula.

$$\text{Sp. gr.} - 1000 + \text{per cent. fat} = \text{solids not fat.}$$
$$4$$

The accuracy of the hydrometer was checked on several occasions by direct weighing in a specific gravity bottle, and the centrifugal results by the Werner Schmidt method. The results agree closely, except that with milks abnormally high in fat the results are somewhat on the low side.

Fat.	Solids not fat.	Total solids.
3586 p.c. ...	8736 p.c. ...	12322 p.c.

A comparison is given between the figures obtained in the Royal Agricultural Society's Competition from May 22nd to June 22nd, 1916, from 144 samples from 67 competitors and 76 samples from milkshops during the same period :—

Milks.	Fat.	Solids not fat.	Tl. solids.
Rl. Agric. Show Competition	3·65 p.c.	9·03 p.c.	12·68 p.c.
Milkshops	3·27	8·84	12·11

SAMPLES FROM MONSALL HOSPITAL AND BAGULEY SANATORIUM.

Samples.	Fat (average).	Solids not fat.	Total solids.
68	4·070 p.c.	8·925 p.c.	12.995 p.c.

There are two milk Inspectors appointed to inspect the dairies and milkshops in Manchester, who divide the City into north and south. Their function is to inspect all new milkshops applying for registration, to find out unregistered milkshops, to make a report on each of them, and to see that the regulations are complied with in their districts. The greater amount of the milk used in the City is supplied from small milkshops, containing a miscellany of articles, mostly groceries. It is almost impossible, in many of them, to avoid some accumulation and scattering of dust. The milk is kept on the counter, usually in a bowl, which in general there is no effort to keep cool. It is, however, kept covered by clean board or by muslin weighted. When pressed in the matter of cleanliness, the shopkeepers inform us that the worst offenders are the customers, who bring unclean jugs which have contained beer or other articles, and their services have been enlisted to prevent these occurrences as far as practicable. It is much to be desired that the sale of milk should be restricted to certain shops, in connection with which provision is made for the cleaning and suitable storage of utensils.

Such is the primary function of these two Inspectors, and they only been put to the inspection of cowsheds in default of veterinary inspection. Nevertheless, they have done much useful work, although, as already stated, it is found that we cannot at present get structural specifications carried out. At the same time it is desirable that such specifications shall be proceeded with, and issued, so that they can be proceeded with when the staff is resonstituted.

[The observations are summarised in 9 clauses, of which three are here quoted

(1) The milk sold in Manchester is of fairly high chemical quality. (2) Though much cleaner in appearance than it was 20 years ago, it is still, on the average, far from clean, and therefore far from fresh in so far as the essential feature of freshness is concerned. (3) There is much tuberculous infection in the milk at present, which has extended into the Manchester cowsheds. (9) It is worthy of consideration whether the Corporation could not produce milk in and near Manchester for the use of young children.

Notwithstanding numerous difficulties in the way of such examinations, 321 samples of farmers' milk were examined, of which 38 (11·83 p.c.) were shown biologically to contain the infection of tuberculosis. This is somewhat lower than in 1915, but is still very high. As already explained, the action taken in connection with tuberculous milk has been crippled by shortage of staff. It is also possible, on other grounds, that the proportion of tuberculous milks may have been higher than the figures indicate.

While acknowledging our indebtedness to the Markets Committee, who have allowed the services of Mr. J. F. Dixon during one day in the week, unless some pressing need for his services in their department supervenes, it must be recognised that much more could be accomplished if we had the whole time of a Veterinary Surgeon engaged on this work.

Tuberculous Milk.

During the year 386 samples of milk have been collected by the Food and Drugs Inspectors in connection with tuberculosis. Of this number, 354 were collected at the railway stations, and the remaining 32 from carts coming in by road. The number of farmers represented in the total is 321. Of these 207 reside in Cheshire (24 sent tuberculous milk): 45 in Derbyshire (4): 23 in Staffordshire (3): 43 in Lancashire (3): 3 in Yorkshire, Westmoreland, and Cumberland.

Thirty farms were visited in consequence of milk found to contain tubercular infection; also two visited as result of notification. Eighty-one specimens were taken from individual cows as result of following up station and other samples: of these, 18 from individual cows proved to be tuberculous. Eighteen udders proved to contain lesions. Two were taken from individual cows as the result of *notification* or *otherwise* than owing to the presence of tubercle bacilli in mixed milk.

From particulars supplied by farmers, 195 of whom replied to our queries, we find that on these farms there were 4217 cows.

The Biology of Twins.

Whether it be from motives of economy, or as an offset to its unapproachability, or whatever be the cause, the "modest and retiring" armadillo of Texas, with its nine zones of body armour (*Dasypus novemcinctus*) is distinguished above other animals by the fact that from a single fertilized ovum it habitually gives birth to four young. And these four young are "identical" and invariably of the same sex. Around the study of this phenomenon, which he and Dr. J. T. Patterson have continued for the last eight years, Prof. Horatio Hackett Newman, now of the University of Chicago, has built up a useful volume—The Biology of Twins (Mammals): The University of Chicago Press, 1917, 8vo., pp. 179, with index, 1.25 dols. net.

Prof. Newman has brought together the observations of himself and others contained in many scattered papers upon the polyembryony of Dasypus and allied forms, and describes the embryology of the condition in studiously clear and simple language. With this as a basis, he proceeds to discuss the biology of twinning as it occurs in man and other mammals. As is by now generally acknowledged, among animals which usually produce single young, two orders of twins, triplets and quadruplets may show themselves, namely, the production of paired or plural offspring from plural eggs (*fraternal twins*), and the production of paired or plural offspring from a single fertilized egg or zygote (*duplicate twins*). As to the relative frequency of these two orders in man, the author quotes the analysis of J. B. Nichols, of some 700,000 cases of twin births, from which it appears that "nearly one-half of all same-sexed twins are monozygotic." Such twins are strikingly like each other, are always of the same sex, and, as Professor Wilder has shown, the identity extends to the palm and fingerprint patterns, although here, curiously, whereas in some cases there is an almost complete mirror imaging of the two palm patterns of the two individuals, the left hand of y corresponding to the right hand of x, in other cases this reversal occurs to only a limited extent, but then always in connexion with the pattern of the index fingers. Newman demonstrates a parallel condition in connexion with the bands of armour of the armadillo, the first band taking the place of the index finger in man; and as the demonstration is absolute that in the Texan armadillo the twinning is monozygotic, any last doubts as to the existence of monozygotic twins in man must disappear.

Newman shows clearly that the four embryos in Dasypus do not originate each from one of the four primary blastomeres of the fertilized egg; nor does he accept Assheton's theory of budding. His preparations point to a fission or duplication of the apical point of the growth zone, with formation of secondary growing points as the cause of twinning, that is, to the origin of these monozygotic twins at a period when some differentiation has occurred in the embryo, so that the twins are not of necessity absolutely identical in each detail.

One of the most interesting chapters in the book is that upon the "freemartin"-which, ever since John Hunter, has been a source of keen discussion. Newman rejects Dr. Berry Hart's Mendelian hypothesis, holding that it is based on error, since bovine twins are not monozygotic. Bateson seems to have fallen into the same error. Professor F. R. Lillie has recently solved the mystery by a study of abundant material obtained from the Chicago stockyards (*Science*, N.S., 43, 1916). He shows that in cattle a twin pregnancy is almost always the result of fertilization of an ovum from each ovary. When these are of different sexes and there is fusion of the two chorions *in utero* with vascular anastomosis, since the male reproductive organs develop earlier than the female, the reproductive system of the female is largely suppressed, apparently as the result of antagonistic hormone action due to the circulation of the male blood in the female, whereby the latter becomes and remains sterile from arrested sexual development, "The results are analogous to Steinach's feminization of male rats, and masculinization of female rats by hetero-sexual transplantation of gonads into castrated infantile specimens."—*Brit: Med: Jour:*

Anthrax Prosecution at Dumbarton.

In the Dumbarton Sheriff Court, before Sheriff Macdiarmid—John Gilchrist, land valuator, 81 Hope Street, Glasgow, agricultural adviser to H.R.H. Princess Louise, and James Wood, under-manager of the Home Farm at Rosneath, were charged with having in their possession or under their charge at the farm named a diseased or suspected bullock or carcase within the meaning of the Anthrax Order, and with failing with all requisite speed to notify the police of the same. Pleading not guilty, they were defended by Mr. Nicol F. Cameron, writer, of Messrs. Clark & Cameron, writers, Glasgow. Mr. H. L. Yeudall, Procurator-Fiscal, prosecuted.

The circumstances of the case as stated were that this animal, a prime bullock, turned unwell on the farm, and was slaughtered and despatched to the dead meat market in Glasgow, where one of the inspectors suspected it to be infected with anthrax, and that view was confirmed later by the Board of Agriculture. The respondents said that the bullock was treated for a chill, and after its slaughter the death in their opinion was due to a knot or twist in the bowels. Neither Mr. Gilchrist nor Mr. Wood had had any experience of anthrax. It had never been known about Rosneath, and they pleaded that what they did was done in good faith and without the least suspicion that there was any contravention of the Order in question.

Prof. John R. Dewar, veterinary inspector for Edinburgh, for the respondents, spoke of the difficulty of diagnosing anthrax in the living animal. Having heard the evidence that day, he did not think there was anything suspicious in all that had taken place, or anything to cause him to believe that there was a duty on the accused to notify the authorities.

Mr. Alexander M'Kay Trotter, the veterinary inspector to the Glasgow Corporation, for the prosecution, said that anyone accustomed to handling carcases or expert with anthrax would have his suspicions immediately aroused over this carcase. Stockowners had a clear duty under the Order, and right throughout the whole Diseases of Animals Orders to take every precaution, and it was a simple duty for them to safeguard themselves; they had only to notify the first constable, who was bound to notify the veterinary inspector, who in turn was bound to proceed immediately to the place. In the whole circumstances of this case he considered there had been gross negligence.

The Sheriff said that the case was of some importance, and he proposed to consider it. He therefore delayed his decision, and on Saturday last delivered his judgment. He said that Section 20 of the Anthrax Order provided that the disease of anthrax was to be presumed, unless repondents could prove that they had not the knowledge or could not, with reasonable diligence, obtain it. In this case he thought it was clear that accused could with perfect ease and reasonable diligence have obtained the knowledge that there was anthrax in this carcase before they sent it to Glasgow. As Mr. Wood had been acting under orders, the Sheriff dismissed him with an admonition, but in Mr. Gilchrist's case he imposed a fine of £10, with the alternative of ten day's imprisonment, instructing that £5 of the fine be paid over to the prosecutor towards his expenses. Mr. Buchanan, writer, Dumbarton, asked that a case might be stated for appeal.—*The Scottish Farmer.*

Glasgow Veterinary College (Incorporated).

A meeting of the governors of the Glasgow Veterinary College was held within the secretary's chambers, 105 St. Vincent Street, Glasgow, on Wednesday, Sir Hugh Shaw Stewart, Bart., C.B., in the chair.

Sir Hugh Shaw Stewart was unanimously reappointed chairman, and Mr. J. Campbell Murray, vice-chairman, of the board of governors for the current year. The meeting expressed deep regret at the deaths of Sir David C. M'Vail and Mr. John Pollock, two of the governors.

Professor Gaiger was appointed interim director of studies. It was reported that everything possible was being done to expedite the equipment of a bacteriological laboratory at the college in connection with the special research work which is to be undertaken by Professor Gaiger at the college, at the instigation of the Board of Agriculture and the Secretary for Scotland, into braxy and other sheep diseases.

It was decided that an appeal should be made to flock-masters throughout the country to give their assistance both financially and by supplying examples of the disease, and a committee was appointed to consider the best means of making the appeal.—*The Scottish Farmer.*

Maize Germ Meal for Cattle.

Maize germ meal is amongst the most suitable and useful kinds of concentrated commercial foodstuffs for feeding to dairy cows. Taking its high feeding value into consideration, it is a comparatively cheap food; in fact, it is one of the most economical artificial feeding-stuffs that can be used on the dairy farm.

Maize germ meal, also sometimes termed, germ of maize meal, consists of the ground-up germs of maize grains, and is a by-product which is obtained in the manufacture of starch from maize. Maize germs contain a high proportion of nitrogenous matter, while also fairly rich in oil constituents. It exerts a very favourable effect upon the secretion of milk, due in the main to the comparatively high percentage of albuminoids (or nitrogenous matter) which it contains. It is a perfectly wholesome and safe food to use for cow feeding purposes, even when fed in fairly large quantities, and it proves thoroughly palatable to the cows. From 3-lb. to 4-lb. constitute a suitable daily allowance of this foodstuff for a cow in milk. A pound or two more than the latter quantity can, however, be safely fed if desired, but better results in milk production are usually obtained when a mixture of two or more of these foods is fed than when an equally large ration of only one kind is provided.

Maize germ meal is frequently believed to be very similar to maize meal, but the two foods are entirely distinct in their feeding value and chemical composition. Maize meal is very starchy, containing a high proportion of carbohydrates, and it has a low percentage of albumieoids.

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
	Out-breaks (a)	Animals.	Out-breaks (a)	Animals.	Out-breaks (b)	Animals.	Out-breaks (b)	Animals.	(b)	Out-breaks (a)	Slaughtered. *
GT. BRITAIN. Week ended Dec. 22	10	11					62	129	21	22	1
Corresponding week in 1916 ...	15	20				2	42	91	27	75	38
Corresponding week in 1915 ...	10	10			1	1	40	105	22	61	225
Corresponding week in 1914 ...	13	20	3	42	1	5			15	77	361
Total for 51 weeks, 1917	417	474			24	55	2477	4613	521	2081	864
Corresponding period in 1916 ...	538	642	1	24	46	117	2063	4534	345	4239	9119
Corresponding period in 1915 ...	566	632	56	702	49	85	879	1902	238	3913	16434
Corresponding period in 1914 ...	710	775	27	166	97	286	1530	2642	218	4298	39078

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.
(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked :—
Board of Agriculture and Fisheries, Dec. 25, 1917 Excluding outbreaks in army horses.

IRELAND. Week ended Dec. 15	...	...	...	...	...	...	Outbreaks 4	12	...	...
Corresponding Week in 1916 ...	...	...	...	...	...	...	1	28	5	52
Corresponding Week in 1915 ...	...	...	...	...	...	...	...	12	5	10
Corresponding Week in 1914 ...	...	...	...	...	...	...	1	5	3	8
Total for 50 weeks, 1917 ...	3	5	...	...	1	1	45	407	197	1127
Corresponding period in 1916 ...	3	7	...	...	...	...	61	454	304	1917
Corresponding period in 1915 ...	2	2	...	...	1	3	68	398	243	1349
Corresponding period in 1914 ...	1	1	76	957	...	..	76	467	190	951

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Dec. 17, 1917.
NOTE.—The figures for the Current Year are approximate only. * As diseased or Exposed to Infection

ARMY VETERINARY SERVICE

War Office, Dec. 11.

The following Dispatch has been received by the Secretary of State for War :—

General Headquarters, Nov. 7, 1917.

Sir,—I have the honour to submit a list of names of those officers serving, or who have served, under my command during the period February 26th to midnight, September 20/21st, 1917, whose distinguished and gallant services and devotion to duty I consider deserving of special mention.

I have the honour to be, Sir, your obedient servant,
D. HAIG, Field-Marshal, Commander-in-Chief.
The British Armies in France.

STAFF.

* * * *

Capt. (actg. Maj.) W. Ascott ; Capt. (actg. Maj.) A. N. Foster, F.R.V.C.S. ; Maj. (temp. Lt.-Col.) C. B. M. Harris, D.S.O., F.R.C.V.S., Res. of Off ; Capt. (actg. Maj.) J. J. Hilliard ; Capt. (temp. Maj.) A. L. Horner ; Capt. (temp. Maj.) J. L. C. Jones ; Maj. W. Ludgate ; Maj. R. C. Matthews ; Maj. F. A. S. Moore ; Col. (temp. Brig.-Gen.) J. Moore, C.B., F.R.C.V.S. ; Capt. (temp. Maj.) C. E. Neill ; Lt.-Col. (temp. Col.) A. C. Newsom, C.M.G. ; Maj. (actg. Lt.-Col.) W. H. Nicol ; Maj. (actg. Lt.-Col.) A. Olver, C.M.G., F.R.C.V.S. ; Capt. (actg. Maj.) F. R. Roche-Kelly ; Capt. (temp. Maj.) J. Scott-Bowdon ; Maj. J. R. Stevenson ; Lt.-Col. (actg. Col.) W. J. Tatam, C.M.G. ; Capt. (temp. Maj.) R. Tindle ; Maj. L. M. Verney, F.R.C.V.S. ; Lt.-Col. (temp. Col.) F. W. Wilson, C.M.G., F.R.C.V.S.

Extracts from *London Gazette*,

WAR OFFICE, WHITEHALL, Dec. 22.

REGULAR FORCES. ARMY VETERINARY CORPS.

Capt. R. L. L. Hart, E. Afr. Vety. Corps, to be temp Capt. (Oct. 8, sen. from Sept. 1, 1914) (substituted for the notification in the *Gazette* of Nov. 2).

The following casualties are reported :—
ACCIDENTALLY KILLED—Capt. W. Huston, attd. A.S.C.
WOUNDED—Capt. J. Martin, attd. R.F.A.

The A.V.C. Comforts Fund.

Dear Sir,—I should be very grateful if you can find space in your next issue for the enclosed extracts from a few of the *many* letters I have recently received in acknowledgement from O.Cs. of Veterinary Units, and men themselves, expressing their appreciation of the gifts sent out by the Comforts Fund. I feel sure it will please, and also reward, those who have so generously knitted and contributed these gifts to know they have thereby given such enjoyment to our men on active service.—Yours truly,

ADELAIDE M. MOORE.

20 Parsifal Road, Hampstead, N.W. 6.
Dec. 22nd.

"The papers and parcels from the A.V.C. Comforts Fund have arrived regularly and have been very much appreciated by the men of No. 7 Mobile Vety. Section, especially as they are the only papers they see. I take this opportunity of thanking you and your co-workers on behalf of No 7, for all you have done for them. Only a few days ago a large parcel of socks, books, stationery, games, etc., arrived and was distributed, and when I tell

you that we had just got back from a month of strenuous word, where the men had no opportunity of getting a change, you can well imagine how much the gifts were appreciated."

"Please accept the best thanks of the N.C.Os. and men of my section and myself for your parcel of comforts which arrived safely yesterday, the contents were greatly appreciated by everybody. The weekly parcels of papers arrive regularly and are always looked forward to, especially now that winter has come and the evenings are very long. I have asked the men if they would like to suggest any change in the papers, and they all agreed that the salection was just what they wanted. We have been having rather a hard time the last few weeks, and the gifts of socks arrived at a most opportune time."

"The parcel from the A.V.C. Comforts Fund arrived quite safely, and I have distributed the articles amongst the men, and on their behalf I thank you very much indeed. The parcel arrived at a time when the gifts were more than usually acceptable and are greatly appreciated."

An A.V.C. Sergt, writes:—"Many warm thanks for the parcel received on 25th. I can assure you the contents will be much appreciated by all in this section."

An A.V.C. Private writes:—"Just a few lines to thank you very much for the comforts you sent to this section and of which the boys are very glad, especially this time of the year. Wishing you a merry Xmas, and great success to the Comforts Fund."

Subscriptions received since list published Dec. 8.

Contribution from No. 2 Vety. Hospital: proceeds of entertainment (fr. 200)				£7	6	10
Mr. W. H. Bloye				1	1	0
Mr. W. Trigger (F.)				2	2	0
per Maj. Greenfield: D.D.V.S. and Vety. Officers 3rd Division				5	5	0
Maj. Ringe				1	1	0
Mr. G. H. Leach (F.)				2	0	0
Mr. Alfred Over				1	1	0
Mrs. Abson				2	2	0
Mrs. O'Rorke				1	0	0
per Mrs. Rutherford: Mr. Jarratt (Longford)				1	1	0
Capt. Clarke Glover				2	0	0
Mr. R. E. L. Penhale					10	6
Mrs. Chadwick (Stirling) and friends				2	10	0
Mr. A. B. Forsyth				1	1	0
Mrs. Holmes (collected):						
Mrs. Keates	1	1	0			
Mr. A. J. Clarke	1	0	0			
Mr. J. O'Dwyer		10	0			
Mrs. Wallace		5	0			
Mrs. R. H. Holmes	2	2	0			
Miss Eileen Holmes		2	0			
				5	0	0

Parcels received from:—

Mrs. Garnett, St. Alban's Work Party, Mrs. Aulton, Mrs. A. Garland, Mrs. Leckie, Miss K. Bevis, Mrs. Kate Hickman, Mrs. Cullen, Mrs. Butler, Mrs. Ascott, Mrs. Robson, Mrs. Macgregor, Mrs. C. L. Tottenham, Mrs. P. J. Nicholls, Mrs. J. Barber, Mrs. J. Edgar, Mrs. Bolton, Mrs. Fearnside, Mrs. Barber, Mrs. Porteous, Mrs. Hepburn, Mrs. R. H. Holmes, Mrs. Weir.

Veterinary Societies—Addresses.

BORDER COUNTIES V.M.S.
Pres: Mr. H. Barrow, M.R.C.V.S., Ireby, Carlisle
Hon. Sec: Mr. R. Craig Robinson, M.R.C.V.S., Carlisle
Meetings, Second Friday of Feb., June, and October

GLASGOW V.M.S.
Hon. Sec. Mr. John S. Keane, 11 Falkland Mansions, Kelvinside

ROYAL VETERINARY COLLEGE V.M.A.
Pres. Capt. J. T. Edwards, B.SC., M.R.C.V.S.
Treas: E. S. Shave, Esq., F.R.C.V.S., M.R.C.S.
Sec: Mr. B. Gorton, M.R.C.V.S. *Asst. Sec.* C. W. Heane.

ASSOCIATION OF VETERINARY OFFICERS OF HEALTH
Pres: Mr. T. Douglas, M.R.C.V.S., Kilmarnock
Hon, Sec. & Treas. Mr. A. M. Trotter, M.R.C.V.S., Moore Street, Abattoir, Glasgow

NATIONAL ASSOCIATION OF VETERINARY INSPECTORS
Pres: Mr. J. Abson, F.R.C.V.S., Sheffield
Hon. Sec: Mr. Trevor Spencer, M.R.C.V.S., Kettering

MUNSTER VETERINARY INSPECTORS' ASSOCIATION
Pres: Mr. D. M. Barry, M.R.C.V.S., Mallow
Hon. Sec: Mr. J. F. Mahony, M.R.C.V.S., Caroline St., Cork

NATIONAL VETERINARY BENEVOLENT & MUTUAL DEFENCE SOCIETY.
Pres: Mr. W. A. Taylor, F.R.C.V.S., Brick-st, Manchester
Hon. Sec & Treas: Mr. G. H. Locke, M.R.C.V.S. Grosvenor Street, Oxford-st., Manchester

VICTORIA VETERINARY BENEVOLENT FUND.
Pres. Mr. S. H. Slocock, F.R.C.V.S., Montague Rd, Hounslow
Hon. Secs. Mr. P. J. Kelland, M.R.C.V.S.
Mr. Fred Bullock.
10 Red Lion Square, London, W.C. 1.

COLONIAL SOCIETIES.

VETERINARY ASSOCIATION OF NEW SOUTH WALES.
Pres: Mr. S. T. D. Symons. M.R.C.V.S., Chief Inspr. of Stock
V. Pres: Maj. A. P. Gribben, P.V.O., M.R.C.V.S.
Hon. Sec. & Treas: Mr. Max. Henry, M.R.C.V.S., B.V.SC. (SYD). 56 Bridge Street, Sydney

BRITISH COLUMBIA V.M.A.
Pres: Dr. S. F. Tolmie, V.S., Victoria
Vice-Pres: Dr. Geo. Howell, V.S., Vancouver
Sec. & Treas.: Dr. K. Chester, V.S., White Rock

ASSOCIATION MÉDÉCALE VÉTÉRINAIRE FRANÇAISE "LAVAL
Sec: Mr. J. P. A. Houde, Montreal

PROVINCE OF QUEBEC V.M.A.
Hon. Sec. Mr. Gustave Boyer, Rigaud, P.Q

VETERINARY ASSOCIATION OF ALBERTA
Hon. Sec. Dr. F. A. McCord, 215 Queen's Ave., Edmonton

ONTARIO V.A.
Pres: Mr. J. H. Tennent, V.S., London, Ontario
Sec: & Treas: Mr. L. A. Wilson, Toronto, Ontario

TRANSVAAL V.M.A.
Pres: Mr. P. Conacher, M.R.C.V.S.
Hon. Sec: Mr. G. W. Lee, M.R.C.V.S., G.V.S., P.O. Box 93, Johannesburg

CAPE OF GOOD HOPE V.M.S.
Pres. Mr. J. D. Borthwick, M.R.C.V.S., Cape Town
Hon. Sec. & Treas. Mr. J. W. Crowhurst, F.R.C.V.S. Longmarket Street, Cape Town

CENTRAL CANADA V.A.
Pres. Mr. Geo. Hilton
Hon. Sec: Mr. A. E. James, Ottawa

VET. ASSN. OF MANITOBA.
Pres: Dr. W. R. Taylor, Portage la Prairie
Hon. Sec. & Treas: Mr. Wm. Hilton, Winnipeg

NATAL VETERINARY MEDICAL ASSOCIATION.
Pres. Mr. F. J. Carless, M.R.C.V.S., Mooi River
Hon Sec. & Treas.

Royal College of Veterinary Surgeons.

President: Mr. Frank W. Garnett, M.R.C.V.S., J.P.

Vice-Presidents: Mr. J. McI. McCall, M.B., C.M., MR.C.V.S.
J. McKinna, F.R.C.V.S.

Secretary and Registrar: Mr. Fred Bullock,
10 Red Lion Square, London, W.C. 1.

NATIONAL VETERINARY ASSOCIATION

President; Dr. O. Charnock Bradley, Prin. R.V. Coll., Edin.
Sec: Mr. J. W. Brittlebank, M.R.C.V.S. *(on Service)*,
Town Hall, Manchester
Assist. Sec: Mr. W. L. Harrison, F.R.C.V.S. *(on Service)*,
11 Anchor Terrace, Southwark Bridge, S.E.
Treas: Prof. G. H. Wooldridge, F.R.C.V.S. *(Acting Hon. Sec)*,
Ryl. Vet. Coll., Camden Town N.W.

Northern Branch:

Pres, Mr. W. A. Taylor, (F) Brick Street, Manchester
Hon. Sec. Mr. A. W. Noël Pillers, (F)
71 Smithdown Lane, Liverpool

LANCASHIRE V.M.A.

Pres: Mr. G. H. Locke, M.R.C.V.S.,
Grosvenor-street, Manchester
Hon. Sec. Mr. J. W. Brittlebank, M.R.C.V.S.,
Town Hall, Manchester
Hon. Treas: Mr. L. H. Stent, M.R.C.V.S., Preston-st, Hulme
Meetings, 1st Thursday in April, June, Sept., & Dec.

LIVERPOOL UNIVERSITY V.M.S.

Pres: Mr. J. P. Heyes, F.R.C.V.S., Wigan
Hon. Sec: Mr. A. Walker, F.R.C.V.S., Mill Lane, West Derby
Pathological Sec: Mr. D. C. Matheson, F.R.C.V.S.
Meetings, May, July, October, January.

MIDLAND COUNTIES V.M.A.

Pres: Mr. J. Malcolm, F.R.C.V.S., Birmingham
Hon. Sec: Mr. H. J. Dawes, F.R.C.V.S.,
Camden House, High-st., West Bromwich
Hon. Treas, Mr. J. J. Burchnall, M.R.C.V.S., Barrow-on-Soar
Meetings, Second Tuesday. Wednesday, Thursday, and Friday alternately in Feb., May, Aug. and Nov.

NORTH OF ENGLAND V.M.A.

Pres:
Hon. Sec: T. T. Jack, M.R.C.V.S., 3 Elmwood-st, Sunderland
Meetings, Third Friday, Feb., May, Aug. and Nov.

NORTH MIDLAND VETERINARY ASSOCIATION

Pres: Mr. T. C. Fletcher, M.R.C.V.S., Sheffield
Hon. Sec: Mr. J. S. Lloyd, F.R.C.V.S., Sheffield

NORTH WALES V.M.A.

Pres: Mr. Hugh Williams, M.R.C.V.S., Ty Croes
Hon. Sec. Mr. L. W. Wynn Lloyd, M.R.C.V.S., Carnarvon
Meetings, First Tuesday, March and September

SOUTH DURHAM AND NORTH YORKSHIRE V.M.A.

Pres: Mr. J. M. Walker, F.R.C.V.S., Hartlepool
Hon. Sec. & Treas: Mr. F. H. Sanderson, M.R.C.V.S.
Victoria Road, Darlington
Meetings, First Friday, Mar., June, Sept. and Dec.

YORKSHIRE VET. ASSOCIATION

Pres. Mr. S. E. Sampson, M.R.C.V.S., Hillsboro', Sheffield
Hon. Sec; Mr. J. Clarkson, M.R.C.V.S., Garforth, nr. Leeds
Hon. Treas: Mr. A. McCarmick, M.R.C.V.S.,
Kirkstall-road, Leeds

Southern Branch:

Pres. Sir Stewart Stockman, 4 Whitehall Place, S.W.
Sec.

CENTRAL V.S.

Pres. Prof. G. H. Wooldridge, M.R.C.V.S., R.V. Coll, London
Hon. Sec: Mr. H. A. MacCormack, M.R.C.V.S.,
122 St. George's Avenue, Tufnell Park, N.

Meetings (pro. tem.), First Thursday in October and alternate months, except August, [illegible]
10 Red Lion Square, Holborn, at 7 p.m

EASTERN COUNTIES V.M.A.

Pres. Mr. T. E. Barcham, M.R.C.V.S., Paston, Norfolk
Hon. Sec. & Treas: Mr. A. C. Holl, M.R.C.V.S., New Buckenham
Meetings, Second Tuesday, Feb., July and Sept.

LINCOLNSHIRE AND DISTRICT V.M.S.

Pres. Mr. C. W. Townsend, F.R.C.V.S.,
Long Stanton, Cambridge
Hon. Sec & Treas: Mr. Tom Hicks, M.R.C.V.S.,
Boston Road, Sleaford
Meetings, Second Thursday Feb., June, and October

ROYAL COUNTIES V.M.A.

Pres: Mr. J. Willett, M.R.C.V.S., 6 Harley Place, N.W.
Hon. Sec. & Treas: Mr. G. P. Male, M.R.C.V.S., Reading
Meetings, Last Friday, Jan., April, July and Nov.

SOUTHERN COUNTIES V.S.

Pres: Mr. G. H. Livesey, M.R.C.V.S., Hove, Sussex
Hon. Sec: Mr. J. T. Angwin, M.R.C.V.S., Arundel *(on Service*
Hon. Treas: Mr. E. W. Baker, M.R.C.V.S., Wimborne
Meetings, Last Thursday, Mar., June and Sept.

SOUTH EASTERN V.A.

Pres. Mr. E. Lyne Dixson, M.R.C.V.S., Margate
Hon. Sec. & Treas. Mr. H. P. Hogben, M.R.C.V.S.,
3 Manor Road, Folkestone

WESTERN COUNTIES V.M.A.

Pres: Mr. W. Roach, F.R.C.V.S., York Rd., Exeter
Hon. Sec. Mr. W. Ascott, M.R.C.V.S., *(on Service)*
Mr. C. E. Tucker, M.R.C.V.S., 7 Greville St., Bideford *(pro.tem.)*
Hon. Treas: Mr. P. G. Bond, M.R.C.V.S., Plymouth
Meetings, Third Thursday, March, July and November

Irish Branch:

Pres. Mr. A. Watson, Municipal Buildings, Dublin
Sec.. Mr. P. D. Reavy, Leafield, Bundoran, Co. Donegal

CENTRAL V.A. OF IRELAND.

Pres:
Hon. Sec. Mr. E. C. Winter, F.R.C.V.S., Queen-st., Limerick
Treas: Mr. J. F. Healy, M.R.C.V.S., Midleton

CONNAUGHT V.M.A

Pres. Mr. D. Hamilton, M.R.C.V.S., Ballina
Hon. Sec. & Treas. Mr. A. J. Moffett, M.R.C.V.S., Galway

VET. MED. ASSN. OF IRELAND.

Pres: Mr. J. H. Norris, M.R.C.V.S., Dublin
Hon. Sec: Prof. J. J. O'Connor, M.R.C.V.S., R.V. Coll., Dublin
Hon. Treas: Prof. J. F. Craig, M.A., M.R.C.V.S.,
R.V. Coll., Dublin

NORTH OF IRELAND V.M.A.

Pres: Mr. A. M. Crighton, M.R.C.V.S., Lisburn.
Hon. Sec; Mr. J. A. Jordan, M.R.C.V.S., Belfast
Hon. Treas; Mr. H. McConnell, M.R.C.V.S., Armagh

THE VETERINARY OFFICERS ASSOCIATION FOR IRELAND.

Pres: Mr. F. W. Emery, F.R.C.V.S., Dublin
Hon. Sec: Mr. T. McGuinness, B.A., M.R.C.V.S.,
36 Mount Charles, Belfast
Hon. Treas: Mr. Hannon, M.R.C.V.S.

Scottish Branch:

Pres. Dr. O. Charnock Bradley,
Ryl. (Dick) Vet. Coll: Edinburgh
Hon. Sec. Prof. A. Gofton, Muncipal Buildings, Edin.
(on Service).

NORTH OF SCOTLAND V.M.S.

Pres: Mr. W. Hepburn, F.R.C.V.S., Aberdeen.
Hon. Sec. & Treas: Mr. G. Howie, M.R.C.V.S. Alford, Aberdeen
Meetings, Last Saturday in January and August

ROYAL SCOTTISH V.S,

Pres: Mr. Reid, M.R.C.V.S., Auchtermuchty.

SCOTTISH METROPOLITAN V.M.S.

Pres: Mr. J. Riddoch, M.R.C.V.S., Edinburgh
Hon. Sec. & Treas: Mr. Jas. Henderson, M.R.C.V.S.,
Public Health Dept., City Chambers, Edinburgh

WEST OF SCOTLAND V.M.A.

Pres: Prof. John R. McCall, M.R.C.V.S., Vety. Coll. Glasgow
(on Service.
Hon. Sec: Mr. J. F. Macintyre, M.R.C.V.S.,
19 Bank Street, Hillhead, Glasgow
Hon. Treas: Mr. Geo. W. Weir, M.R.C.V.S.,
88 Crookston Street, Glasgow
Meetings, Second Wednesday, May, Oct. and January